

KENWOOD
HI/FI STEREO COMPONENTS

SERVICE MANUAL

KR-710 (KR-710L)

An item of adjustment is written in three languages — English, French and German.

Un article sur réglages est écrit en trois langues, Anglais, Français et Allemand.

Ein Artikel der Abgleich wird auf drei Sprachen, Englische, Französisch und Deutsch geschrieben.

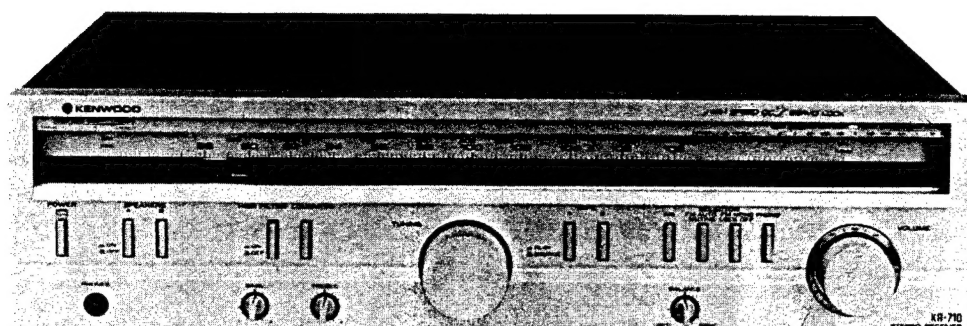


Photo is KR-710

STEREO RECEIVER

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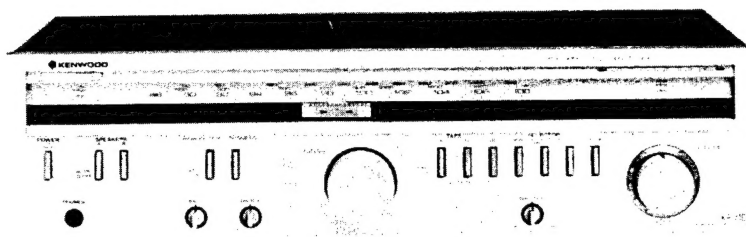


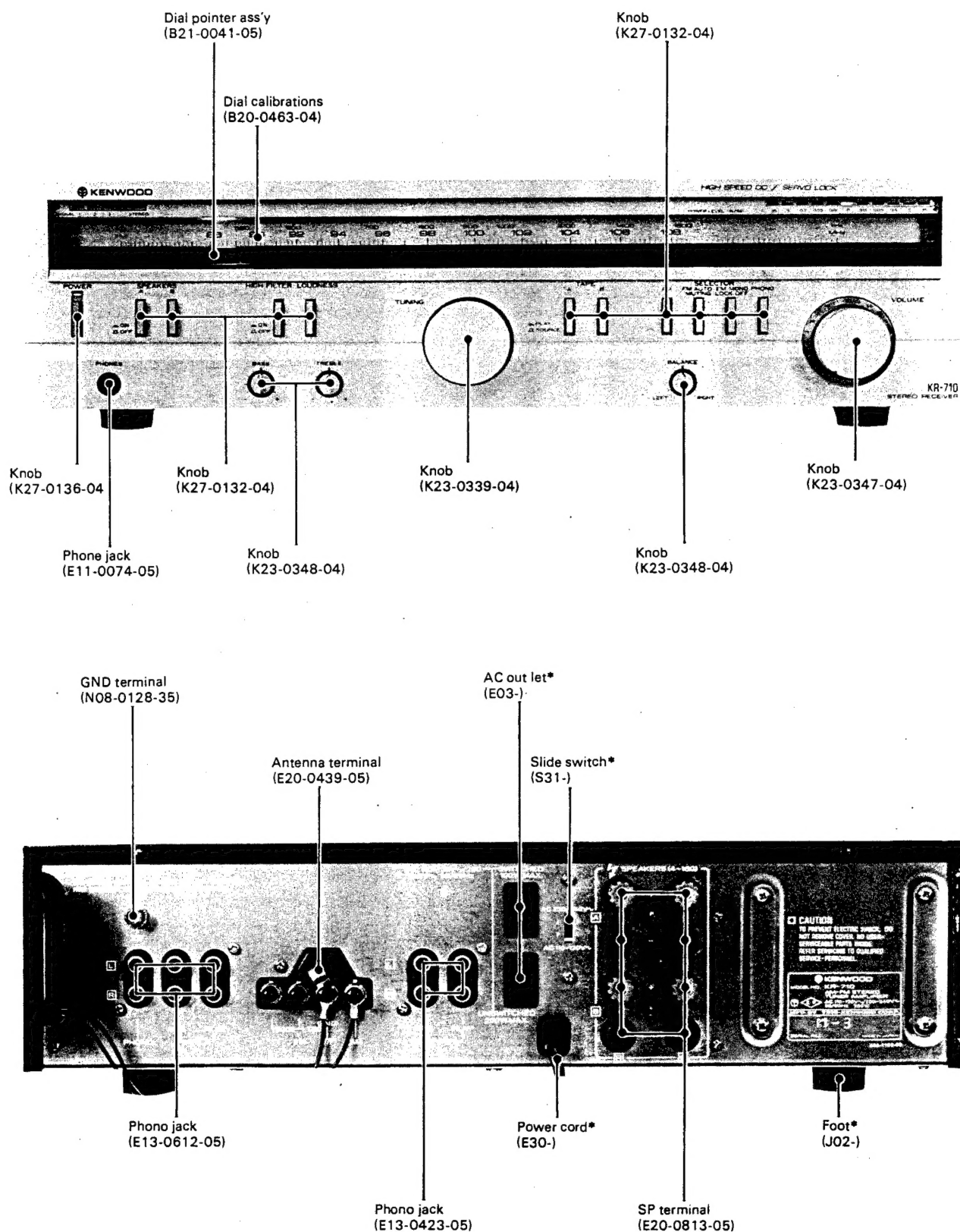
Photo is KR-710L

Note:

Component and circuitry are subject to modification to insure best operation under differing local conditions. This manual is based on the U.S. (K) standard, and provides information on regional circuit modification through use of alternate schematic diagrams, and information on regional component variations through use of parts list.

	Region	Code
KR-710	U.S.A.	K
	Canada	P
	PX	U
	Australia	X
	Europe and Scandinavia	E
	England	T
	Other Areas	M
KR-710L	Audio Club	H
	Europe and Scandinavia	E 2
	England	T 2

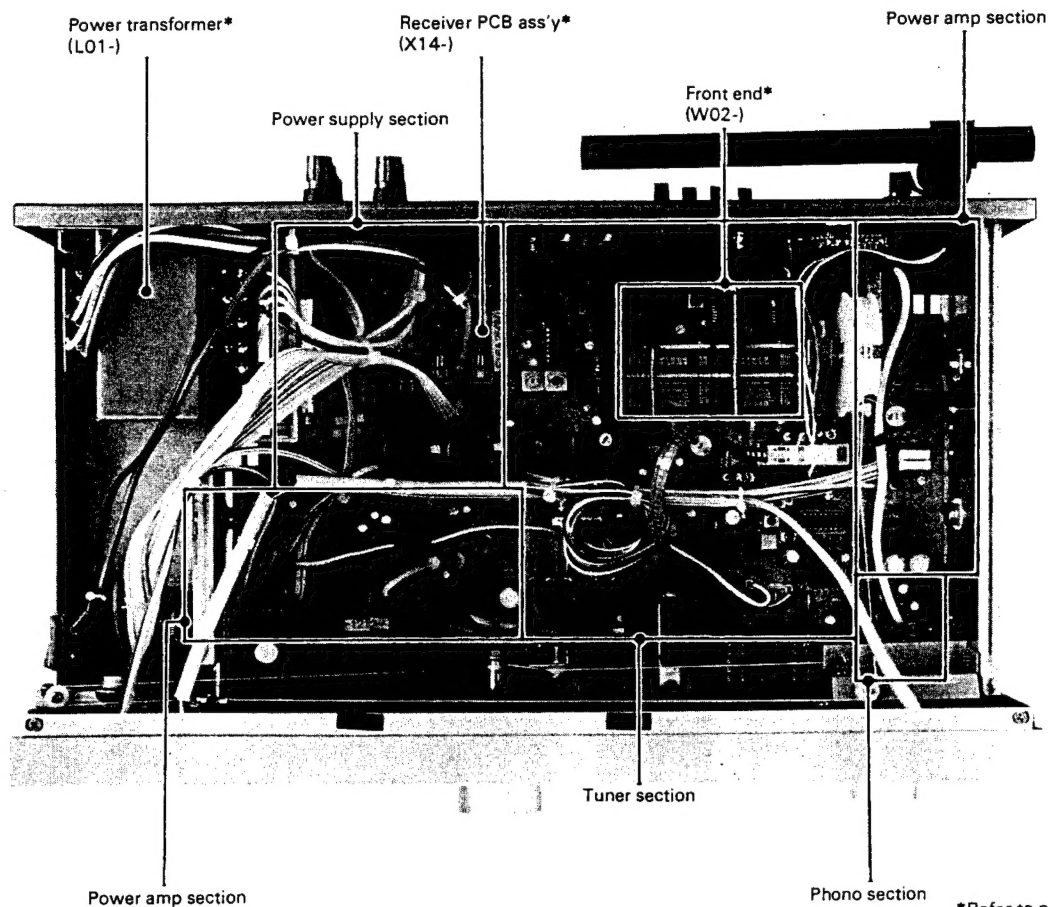
EXTERNAL VIEW



*Refer to parts list. (P17)
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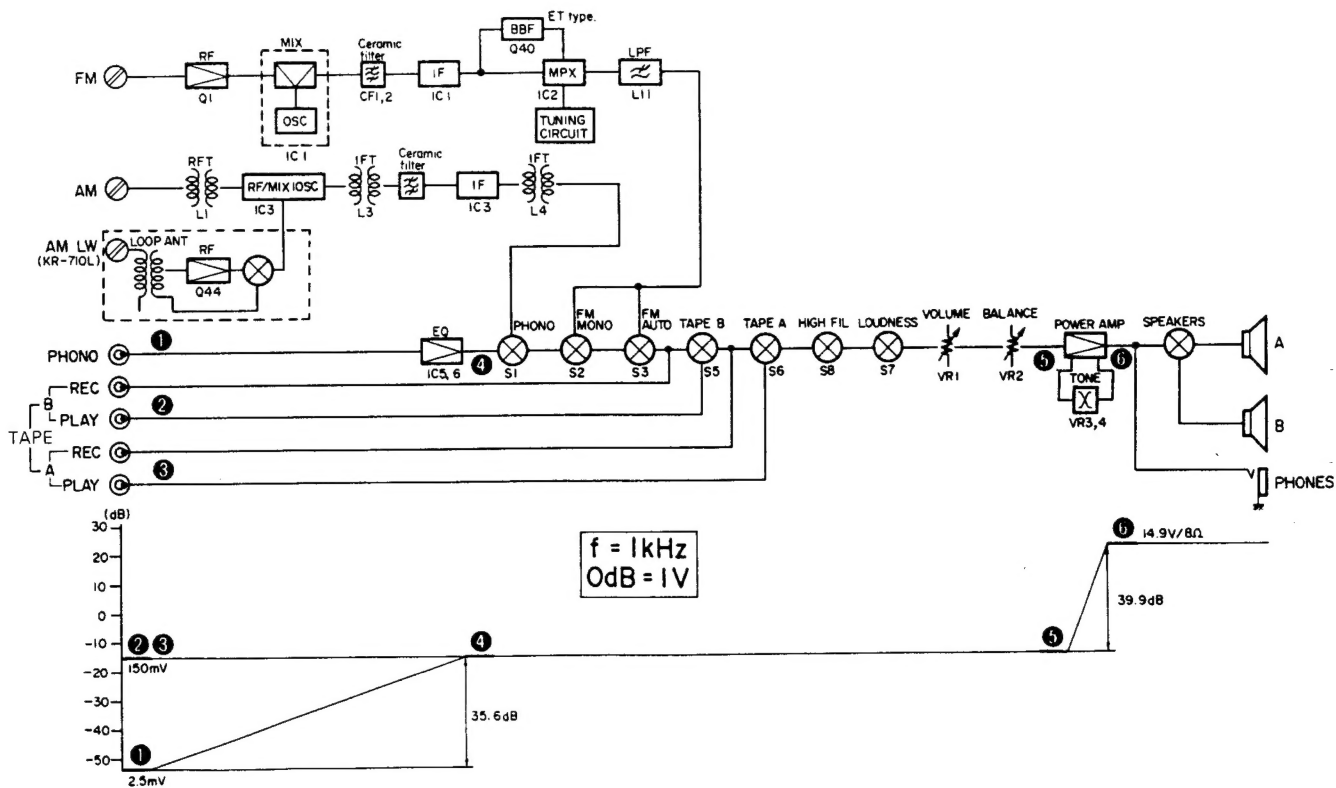
KR-710(L)

INTERNAL VIEW/BLOCK & LEVEL DIAGRAM



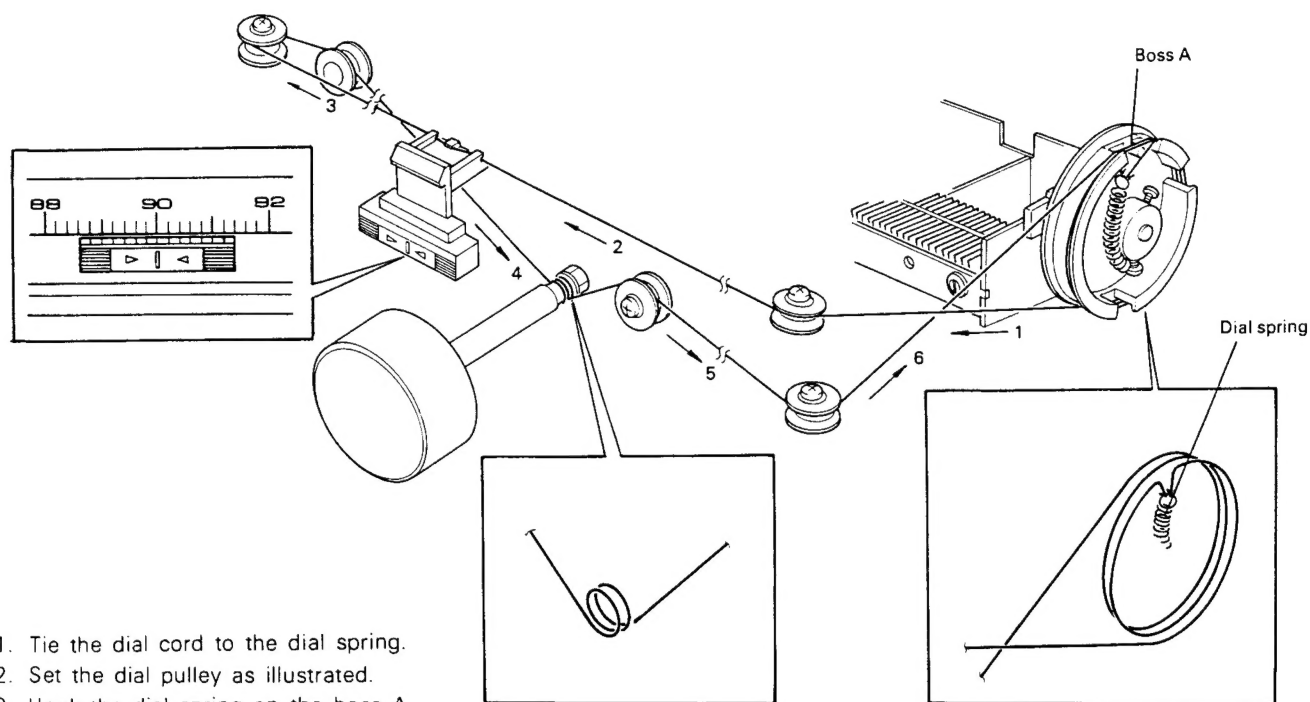
*Refer to parts list. (P17)
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BLOCK & LEVEL DIAGRAM



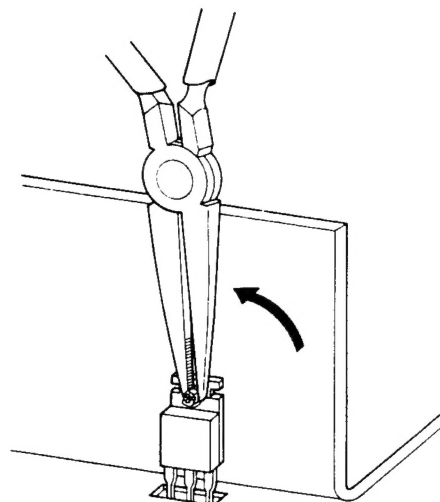
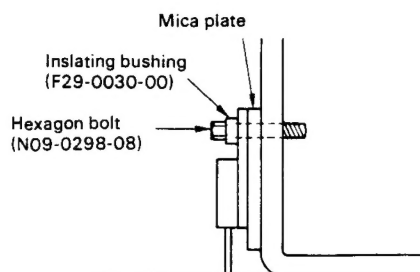
DIAL CORD STRINGING/REPAIR

DIAL CORD STRINGING

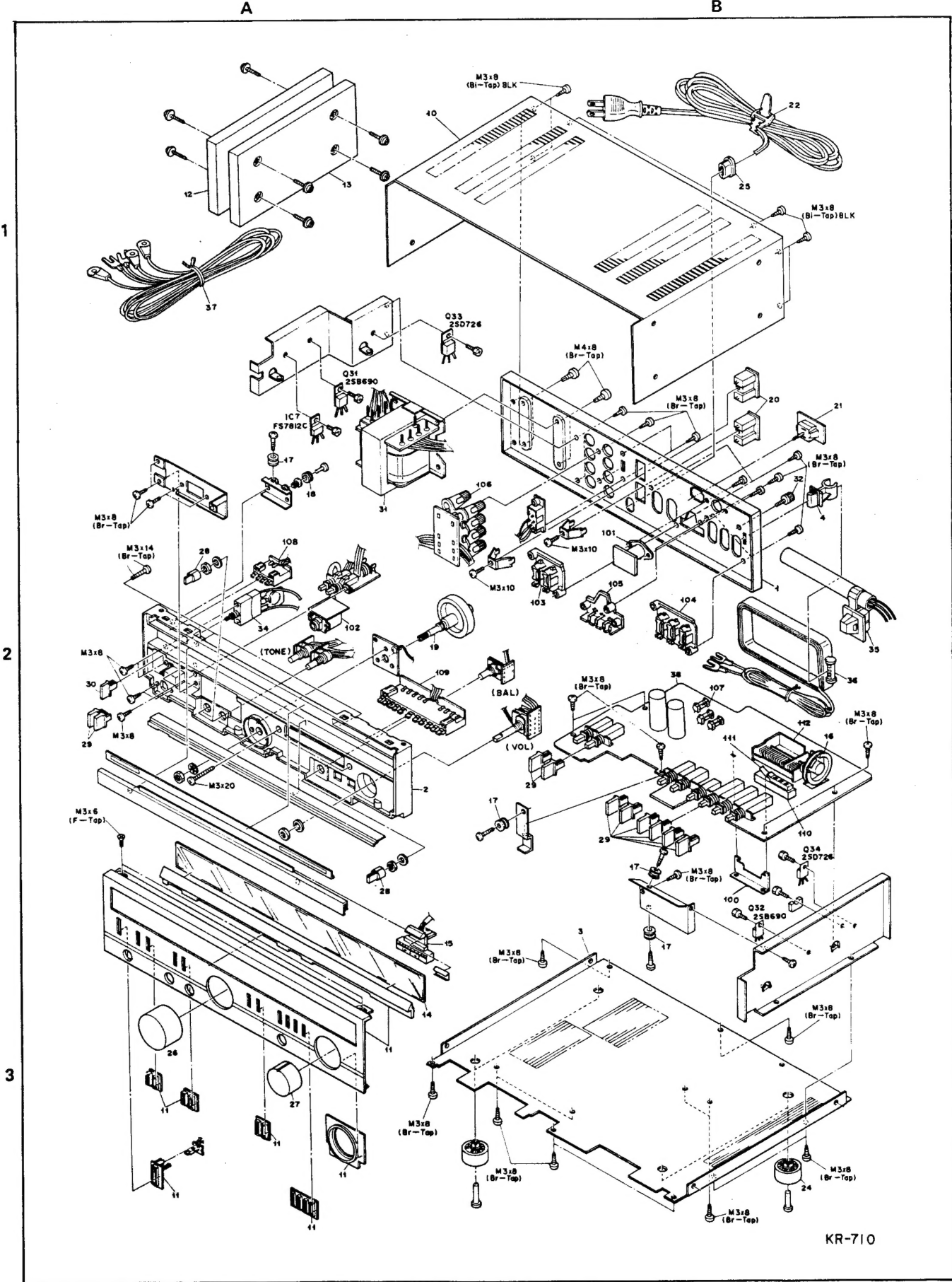


1. Tie the dial cord to the dial spring.
2. Set the dial pulley as illustrated.
3. Hook the dial spring on the boss A.
4. Dress the dial cord in the direction 1 through 4.
5. Wind the dial cord two turns around the dial shaft starting from its lower side.
6. Dress the dial cord in the direction 5 to 6.
7. Wind the dial cord two turns around the dial pulley starting from its upper side.
8. Tie the end of the dial cord to the dial spring.
9. Remove the dial spring from the boss A.
10. Receive a 90 MHz signal, and then mount the dial pointer at the 90 MHz position of the dial calibrations.

POWER TRANSISTOR REPLACEMENT



EXPLODED VIEW



ADJUSTMENT (TUNER)

NO.	ALIGNMENT	TEST EQUIPMENTS		RECEIVER SETTING	OUTPUT INDICATOR	ADJUSTMENT POINTS	REMARKS
		CONNECTION	SETTING				
FM							
1	DISCRIMI-NATOR (1)	Ⓐ	95 MHz 1 kHz, ± 75 kHz Dev	FM-MONO 95 MHz	Ⓑ	—	* 1
2	DISCRIMI-NATOR (2)	ditto	95 MHz 1 kHz, ± 75 kHz Dev 60 dB (ANT input)	ditto	* 2 R6	L7	0V
3	DISCRIMI-NATOR (3)	ditto	ditto	ditto	Ⓑ	L8	Minimum distortion
4	VCO	ditto	95 MHz 0 Dev 60 dB (ANT input)	FM-AUTO/MUTE 95 MHz	Frequency counter to the junction of R22 and VR9 via an AC voltmeter *3	VR9	76 kHz ± 200 Hz
5	IFT	Ⓒ	95 MHz 1 kHz, ± 68.25 kHz Dev SELECTOR: L or R PILOT: ON 60 dB (ANT input)	ditto	Ⓑ	T1 (Front end)	Minimum distortion
6	SEPARA-TION	ditto	ditto	ditto	ditto	VR10	* 4
AM (KR-710)							
①	IFT	Ⓓ	1 000 kHz 400 Hz, 30% Mod	AM 1 000 kHz	Ⓑ	L3	Maximum deflection
②	TRACKING (1)	ditto	600 kHz 400 Hz, 30% Mod	AM 600 kHz	ditto	L1, 2	ditto
③	TRACKING (2)	ditto	1 400 kHz 400 Hz, 30% Mod	AM 1 400 kHz	ditto	TC1, 2 (Front end)	ditto
AM (KR-710L)							
①	IFT	Ⓓ	1 000 kHz 400 Hz, 30% Mod	MW 1 000 kHz	Ⓑ	L3	Maximum deflection
②	MW TRACKING (1)	ditto	600 kHz 400 Hz, 30% Mod	MW 600 kHz	ditto	Bar antenna (A) L2	ditto
③	MW TRACKING (2)	ditto	1 400 kHz 400 Hz, 30% Mod	MW 1 400 kHz	ditto	TC1, 2 (Front end)	ditto
④	LW TRACKING (1)	ditto	160 kHz 400 Hz, 30% Mod	LW 160 kHz	ditto	Bar antenna (B) L1	ditto
⑤	LW TRACKING (2)	ditto	340 kHz 400 Hz, 30% Mod	LW 340 kHz	ditto	CT1, 2	ditto

* 1 ~ 4 : See page 10.

REGLAGES (TUNER)

N°.	ALIGNEMENT	APPAREILLAGE		REGLAGE DU AMPLI-TUNER	INDICATEUR DE SORTIE	POINTS DE REGLAGES	REMARQUES
		RACCORD-MENT	REGLAGE				
SECTION MF							
1	DISCRIMI-NATEUR (1)	Ⓐ	95 MHz 1 kHz. ± 75 kHz Dév	FM-MONO 95 MHz	Ⓑ	—	* 1
2	DISCRIMI-NATEUR (2)	idem	95 MHz 1 kHz. ± 75 kHz Dév 60 dB (Entrée ANT)	idem	* 2 R6	L7	0V
3	DISCRIMI-NATEUR (3)	idem	idem	idem	B	L8	Distorsion minimale
4	OSCILLA-TEUR 76 kHz	idem	95 MHz 0 Dév 60 dB (Entrée ANT)	FM-AUTO/MUTE 95 MHz	Relier un fréquencesmètre au plot R22 et VR9 par un voltmètre C.A. *3	VR9	76 kHz ± 200 Hz
5	TFI	Ⓒ	95 MHz 1 kHz. ± 68,25 kHz Dév SELECTION: L ou R Signal pilote (± 6,75 kHz Dév) 60 dB (Entrée ANT)	idem	Ⓑ	T1 (Partie frontale)	Distorsion minimale
6	SEPARA-TION	idem	idem	idem	idem	VR10	* 4
SECTION MA (KR-710)							
①	TFI	Ⓓ	1 000 kHz 400 Hz. 30% Mod)	AM 1 000 kHz	Ⓑ	L3	Déviati on maximale
②	ALIGNEMENT	idem	600 kHz 400 Hz. 30% Mod	AM 600 kHz	idem	L1, 2	idem
③	ALIGNEMENT	idem	1 400 kHz 400 Hz. 30% Mod	AM 1 400 kHz	idem	TC1, 2 (Partie frontale)	idem
SECTION MA (KR-710L)							
①	TFI	Ⓓ	1 000 kHz 400 Hz. 30% Mod	MW 1 000 kHz	Ⓑ	L3	Déviati on maximale
②	MW-ALIGNEMENT	idem	600 kHz 400 Hz. 30% Mod	MW 600 kHz	idem	Antenne MA (A), L2	idem
③	MW-ALIGNEMENT	idem	1 400 kHz 400 Hz. 30% Mod	MW 1 400 kHz	idem	TC1, 2 (Partie frontale)	idem
④	LW-ALIGNEMENT	idem	160 kHz 400 Hz. 30% Mod	LW 160 kHz	idem	Antenne MA (B), L1	idem
⑤	LW-ALIGNEMENT	idem	340 kHz 400 Hz. 30% Mod	LW 340 kHz	idem	CT1, 2	idem

* 1 ~ 4 : Voir la page 10.

ABGLEICH (EMPFÄNGER)

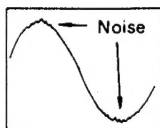
NR.	ABGLEICH	PRÜFEINRICHTUNG		STEUR- GERÄT EINSEL- LUNG	AUSGANGS- ANZEIGE	EINSTELL- PUNKT	BEMER- KUNGEN
		ANSCHLÜSSE	EINSTELLUNG				
UKW-EMPFANGSABTEILUNG							
1	DISCRIMI- NATOR (1)	Ⓐ	95 MHz 1 kHz, ±75 kHz Hub	FM-MONO 95 MHz	Ⓑ	—	* 1
2	DISKRIMI- NATOR (2)	dito	95 MHz 1 kHz, ±75 kHz Hub 60 dB (Eingangs- signalpegel)	dito	* 2 R6	L7	OV
3	DISKRIMI- NATOR (3)	dito	dito	dito	Ⓑ	L8	Minimaler Klirrfaktor
4	SPANNUNGS- GEREGELTER OSZILLATOR	dito	95 MHz 0 Hub 60 dB (Eingangs- signalpegel)	FM- AUTO/MUTE 95 MHz	Frequenzzähler zum Kreuzungs- punkt von R22 und VR9 über einen Wechselspann- ungsmesser *3	VR9	76 kHz ±100
5	ZF-T	Ⓒ	95 MHz 1 kHz, ±68,25 kHz Hub Wähler: L oder R Pilotton: (±6,75 kHz Hub) 60 dB (Eingangs- signalpegel)	dito	Ⓑ	T1 (Frontende)	Minimaler Klirrfaktor
6	STEREO KANAL TRENNUNG	dito	dito	dito	dito	VR10	* 4
MW-EMPFANGS ABTEILUNG (KR-710)							
①	ZF-T	Ⓓ	1 000 kHz 400 Hz, 30% Mod	AM 1 000 kHz	Ⓑ	L3	Maximaler Ausschlag
②	EMPFANGS- BEREICH (1)	dito	600 kHz 400 Hz, 30% Mod	AM 600 kHz	dito	L1, 2	dito
③	EMPFANGS- BEREICH (2)	dito	1 400 kHz 400 Hz, 30% Mod	AM 1 400 kHz	dito	TC1, 2 (Frontende)	dito
MW UND LW - EMPFANGSABTEILUNG (KR-710L)							
①	ZF-T	Ⓓ	1 000 kHz 400 Hz, 30% Mod	MW 1 000 kHz	Ⓑ	L3	Maximaler Ausschlag
②	MW- EMPFANGS- BEREICH (1)	dito	600 kHz 400 Hz, 30% Mod	MW 600 kHz	dito	Ferritantenna (A) L2	dito
③	MW- EMPFANGS- BEREICH (2)	dito	1 400 kHz 400 Hz, 30% Mod	MW 1 400 kHz	dito	TC1, 2 (Frontende)	dito
④	LW- EMPFANGS- BEREICH (1)	dito	160 kHz 400 Hz, 30% Mod	LW 160 kHz	dito	Ferritantenna (B) L1	dito
⑤	LW- EMPFANGS- BEREICH (2)	dito	340 kHz 400 Hz, 30% Mod	LW 340 kHz	dito	CT1, 2	dito

* 1~4 : Sehen den page 11.

ADJUSTMENT (TUNER)/REGLAGES (TUNER)/ABGLEICH (EMPFÄNGER)

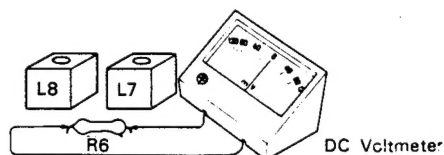
* 1

Adjust the tuning knob so that the same amount of noise is observed at the top and bottom of the output waveform with a weak signal.

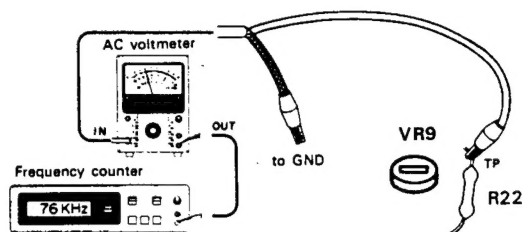


* 2

Connect the DC voltmeter across R6.



* 3



* 4 Minimum output

A compromise adjustment may be required if left-to-right and right-to-left separations are unequal.

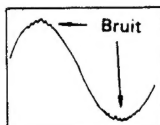
* 5 FM fronted

The FM front end section is completely adjusted in the factory and further adjustment is not necessary. When the FM front end section cannot be repaired by replacing semiconductors, replace the FM front end PCB ass'y and do the following.

- (1) Set FM-SG to 90 MHz, 1 kHz Mod, ± 75 kHz Dev, 60 dB and connect it to the antenna terminal of the receiver.
- (2) Receive the FM-SG signal.
- (3) Fix the dial pointer at 90 MHz.

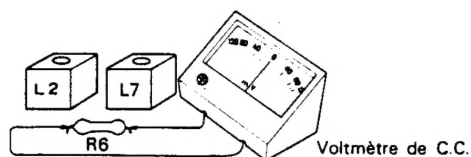
* 1

Ajuster le bouton d'accord de façon que la même quantité du bruit puisse être observé au sommet et en bas de la forme d'onde de sortie sous des conditions d'alimentation de signal faible.

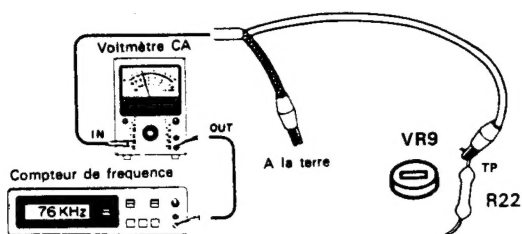


* 2

Relier un voltmètre de C.C. sur R6.



* 3



* 4 Sortie minimale

Si la sortie la droite de diaphonie et la gauche ne sont pas même régler le potentiomètre ajustable pour que la tension de sortie est même.

* 5

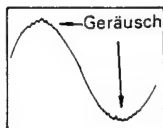
Si la partie frontale FM ne peut pas être réparée en remplaçant les semi-conducteurs PCB de la partie frontale et effectuer les opérations suivantes:

- (1) Régler FM-SG à 90 MHz, 1 kHz Mod, ± 75 kHz, 60 dB et le connecter à la borne d'antenne du récepteur.
- (2) Recevoir le signal FM-SG.
- (3) Fixer l'aiguille du cadran à 90 MHz.

ADJUSTMENT (AMP)/REGLAGES (AMPLI)/ABGLEICH (VERSTÄRKER)

* 1

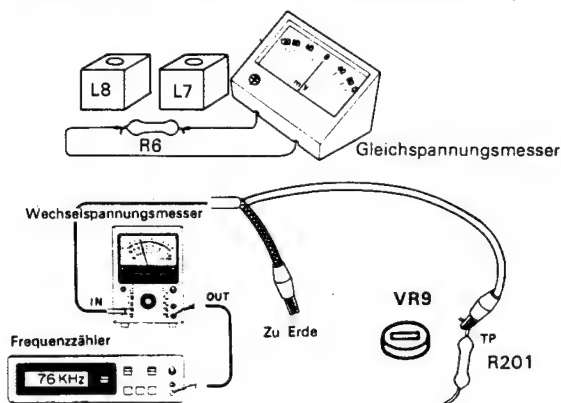
Den Abstimmknopf so einstellen, daß an der oberen und unteren Grenze der Ausgangswellenform bei schwachem Signal dasselbe Geräusch auftritt.



* 2

Einen Gleichspannungsmesser über R6 anschließen.

* 3



* 4 Minimaler Ausschlag

Wenn dem Übersprechanteil des linken Kanals in den rechten Kanal und dem Übersprechanteil des rechten Kanals in den linken Kanal ungleich sind, eine Kompromißabgleichung wird gefordert.

* 5 UKW-Frontende

Das UKW-Frontende wird bereits im Werk vollständig eingestellt. Weitere Einstellung ist daher nicht nötig.

Wenn das UKW-Frontende durch Auswechseln der Halbleiter nicht repariert werden kann, ist die Leiterplatte des Frontendes auszuwechseln und folgende Einstellung vorzunehmen:

- (1) Den UKW-Signalgenerator auf 90 MHz, 1 kHz Modulation ± 75 kHz Hub, und 60 dB einstellen und mit der Antennenklemme des Steuergeräts verbinden.
- (2) Den Steuergeräts so einstellen, daß das Meßsendersignal empfangen wird, während der Skalenzeiger auf 90 MHz zeigt.

OFFSET

1. Set the SPEAKERS switch to A and the VOLUME to 0.
2. Connect a DC voltmeter to the SPEAKERS A terminals.
3. Adjust VR5 (VR6) for a 0V reading of the DC voltmeter.

DECALAGE (OFFSET)

1. Régler SPEAKERS interrupteur au A et VOLUME au 0.
2. Brancher le voltmètre de C.C. aux bornes de sortie (SPEAKERS A) + et -.
3. Régler VR5 (VR6) de façon à ce que le voltmètre de C.C. indique 0V.

VERSCHIEBUNG

1. Den Schalter SPEAKERS auf A und den VOLUME auf 0 einstellen.
2. Einen Gleichspannungsmesser an die Klemmen SPEAKERS A anschließen.
3. Den VR5 (VR6) so regulieren, daß die Gleichspannungsmesser-Ableseung 0V ist.

IDLE CURRENT

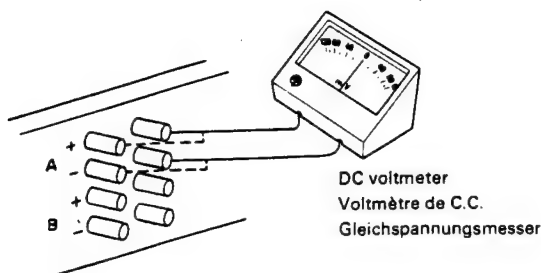
1. Set the VOLUME to 0.
2. Connect the DC voltmeter between the emitters of Q27 and Q29 (Q28 and Q30).
3. Adjust VR7 (VR8) for a 30 mV reading of the DC voltmeter.

COURANT DE POLARISATION

1. Régler VOLUME au 0.
2. Brancher le voltmètre de C.C. sur l'émetteur de Q27 et Q29 (Q28 et Q30).
3. Régler VR7 (VR8) de façon à ce que le voltmètre de C.C. indique 30 mV.

LEERLAUFSTROM

1. Den VOLUME auf 0 einstellen.
2. Den Gleichspannungsmesser zwischen den Emitter von Q27 und Emitter von Q29 (Q28 und Q30).
3. Den VR7 (VR8) so regulieren, daß die Gleichspannungsmesser-Ableseung 30 mV ist.



ADJUSTMENT (REGLAGE, ABGLEICH)

TEST INSTRUMENT

Oscilloscope
 AM signal generator
 FM signal generator
 Audio generator
 AC voltmeter
 FM multiplex generator
 Frequency counter
 DC voltmeter
 Distortion meter
 Dummy antenna

APPREILLAGE

Oscilloscope
 Générateur MA
 Générateur MF
 Générateur audio fréquences
 Voltmètre CA
 Générateur multiplex stéréo
 Fréquence-mètre
 Voltmètre CC
 Distorsion-mètre
 Antenna fictive

PRÜFINSTRUMENTE

Oszilloskop SCOPE
 MW-Signalgenerator AM-SG
 UKW-Signalgenerator FM-SG
 NF-Signalgenerator AG
 Wechselspannungsmesser SSVM
 UKW-Multiplexgenerator FM-MPX
 Frequenzzähler
 Gleichspannungsmesser
 Klirrfaktormesser
 Antennennachbildung

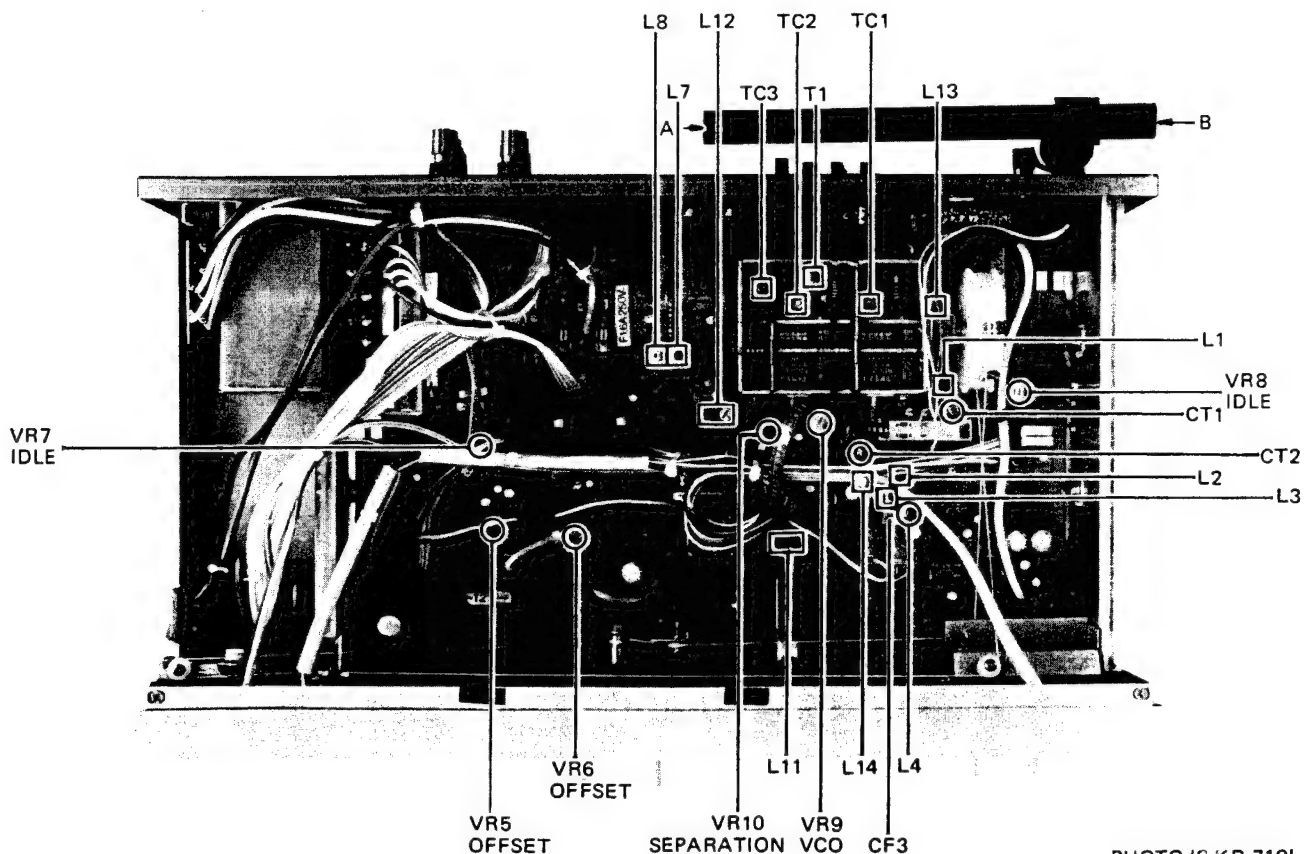
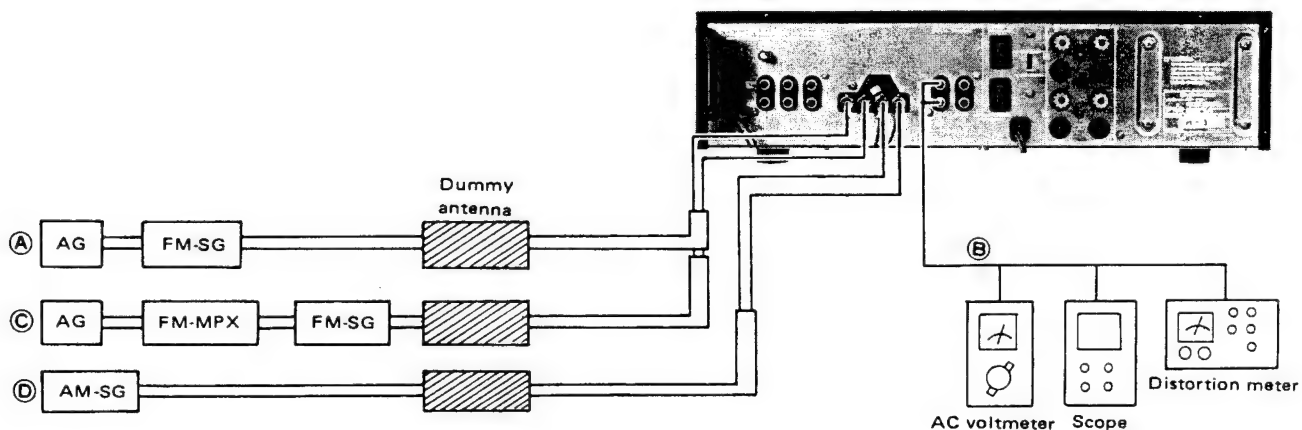
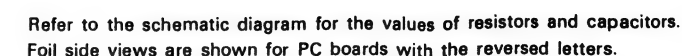
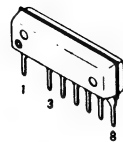
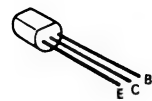


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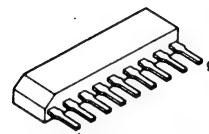
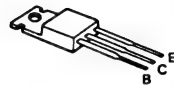
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2SA992
2SC945
2SB647
2SC1845
2SD667

HA1457W



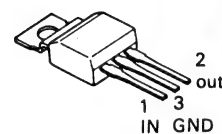
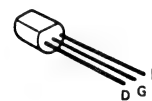
2SB690
2SD726

AN6551

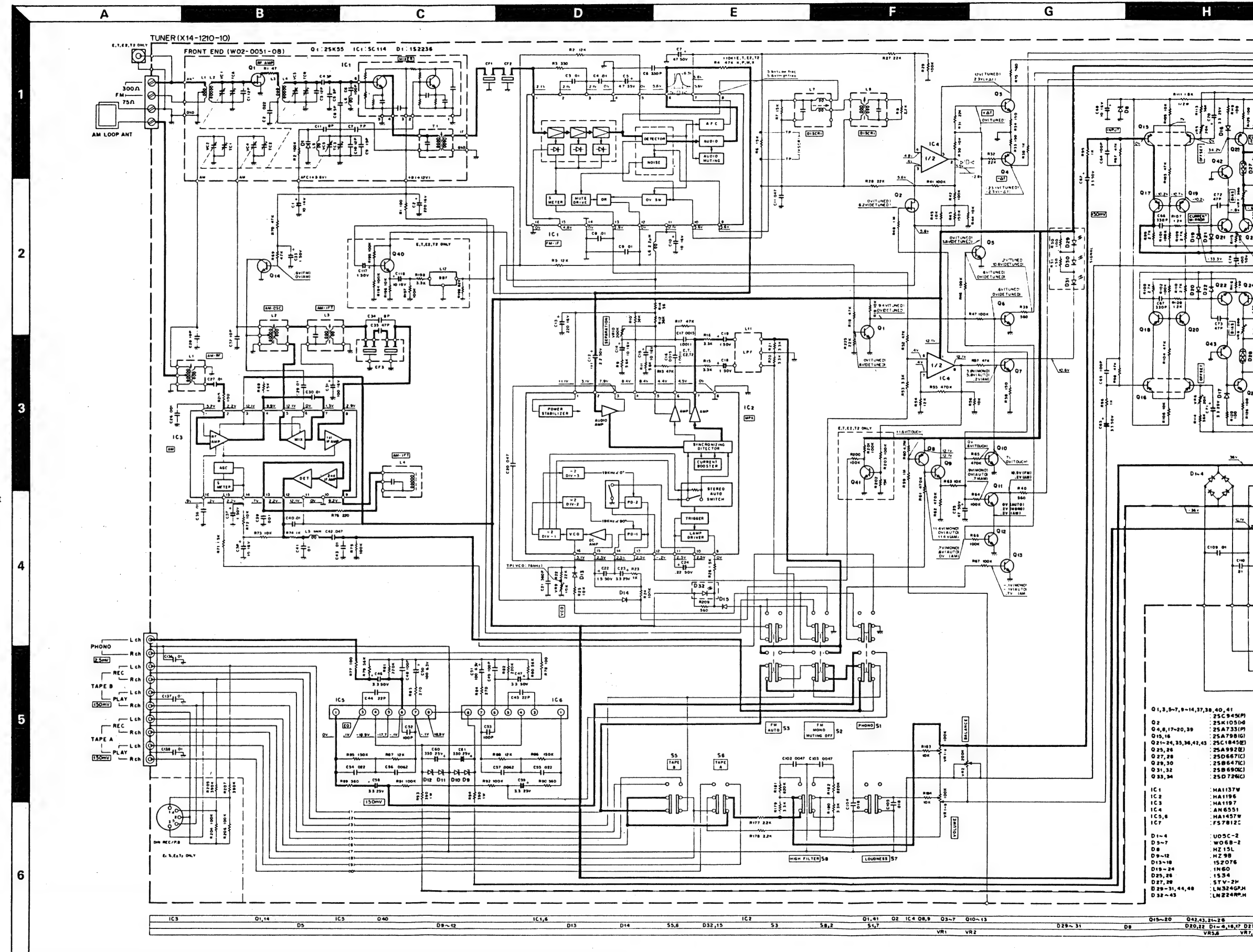
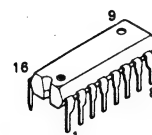


2SK55
2SK105

FS7812C

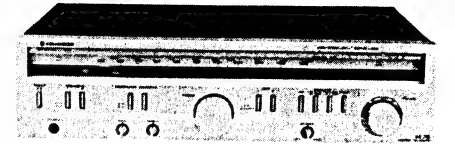


HA1137W
HA1196
HA1197



STEREO RECEIVER

KR-710



SPECIFICATIONS

POWER AMPLIFIER SECTION

Power Output
28 watts* per channel, minimum RMS both channels driven, at 8 ohms from 20 Hz to 20,000 Hz with no more than 0.08% total harmonic distortion.

Both Channels Driven

into 8 ohms at 1,000 Hz..... 31 W + 31 W

into 4 ohms at 1,000 Hz..... 38 W + 38 W

Total Harmonic Distortion (20 Hz to 20 kHz from TAPE)

rated power into 8 ohms..... 0.08%

1 W power into 8 ohms..... 0.04%

Intermodulation Distortion (80 Hz: 7 kHz = 4:1 SMPTE)

rated power into 8 ohms..... 0.04%

1 W power into 8 ohms..... 0.02%

Transient Response

Rise Time..... 1.5 μ s

Slew Rate..... 50 V/ μ s

Damping Factor..... 45 at 1 kHz, 8 ohms

Input Sensitivity/Impedance

PHONO..... 2.5 mV/50 kohms

TAPE..... 150 mV/50 kohms

Signal to Noise Ratio (A weighted)

PHONO..... 78 dB for 2.5 mV input

TAPE..... 84 dB for 5.0 mV input

TAPE..... 104 dB for 150 mV input

Maximum Phono Input Level

at 1,000 Hz..... 200 mV (RMS), THD 0.08%

Frequency Response

PHONO RIAA Standard Curve..... 30 Hz to 20 kHz \pm 0.4 dB

TAPE..... 7 Hz to 200 kHz \pm 3 dB

Tone Control

Bass..... \pm 8 dB at 100 Hz

Treble..... \pm 8 dB at 10 kHz

Loudness Control (VOL. -30dB)..... \pm 10 dB at 100 Hz

High Filter..... 5 kHz, 6 dB/oct

Output Level/Impedance

TAPE REC OUT (Pin)..... 150 mV/300 ohms

FM TUNER SECTION

Usable Sensitivity..... 10.8 dBf (1.9 μ V)

50 dB Quieting Sensitivity

Mono..... 17.2 dBf (4 μ V)

Stereo..... 37.2 dBf (40 μ V)

Signal to Noise Ratio at 65 dBf

Mono..... 76 dB

Stereo..... 71 dB

Total Harmonic Distortion

Mono..... 0.1%

Stereo..... 0.15%

Frequency Response..... 30 Hz to 15 kHz, \pm 1 dB, -2 dB

Capture Ratio..... 48 dB

Image Rejection Ratio..... 70 dB

Spurious Response Ratio..... 90 dB

IF Response Ratio..... 52 dB at 400 kHz

Alternate Channel Selectivity..... 50 dB

AM Suppression Ratio..... 45 dB at 1,000 Hz

Stereo Separation Ratio..... 35 dB at 50 Hz to 10 kHz

Subcarrier Product Ratio..... 45 dB

Antenna Impedance..... 300 ohms balanced & 75 ohms unbalanced

FM Frequency Range..... 88 MHz to 108 MHz

AM TUNER SECTION

Usable Sensitivity..... 20 μ V (350 μ V/m)

Signal to Noise Ratio..... 50 dB

Image Rejection..... 40 dB

Selectivity..... 45 dB

GENERAL

Power Consumption..... 160 W (UL and CSA)

160 W (8 ohms at rated power)

24 W (No Signal)

AC Outlet..... Switched 1, Unswitched 1

Dimensions USA and Canada..... W: 458 mm (18-1/32")

Other Countries..... 440 mm (17-5/16")

H: 110 mm (4-5/16")

D: 298 mm (11-23/32")

Weight..... (Net) 7.5 kg (16.5 lb)

(Gross) 8.5 kg (18.7 lb)

7.2 kg (15.9 lb)

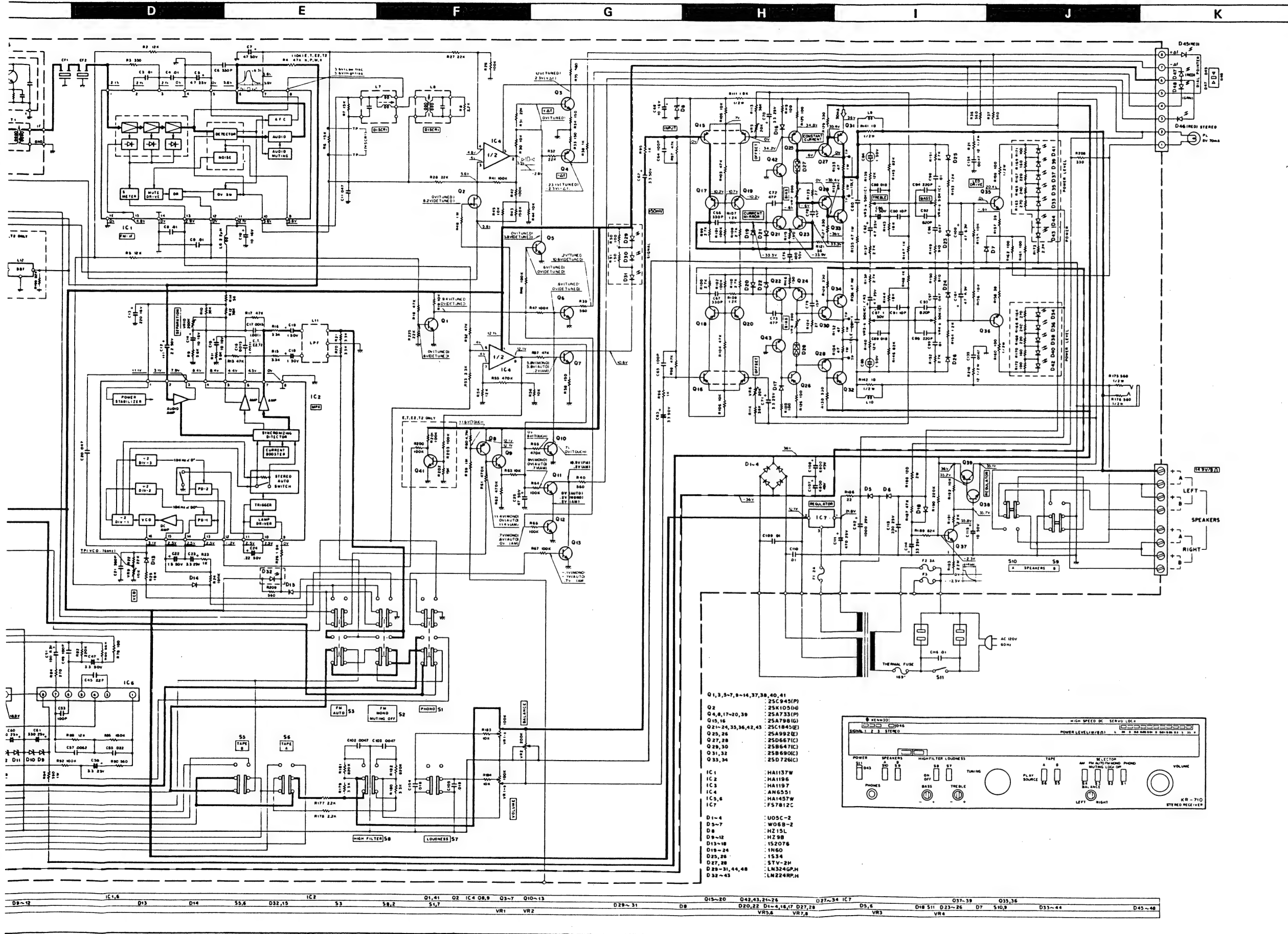
8.2 kg (18.1 lb)

*Measured pursuant to Federal Trade Commission's Trade Regulation rule on Power Output Claims for Amplifier in U.S.A.

Kenwood follows a policy of continuous advancements in development. For this reason specifications may be changed without notice.

Kenwood strebt ständige Verbesserungen in der Entwicklung an. Daher bleiben Änderungen der technischen Daten jederzeit vorbehalten.

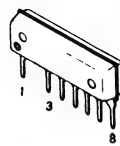
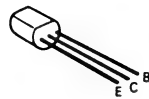
Kenwood poursuit une politique de progrès constants en ce qui concerne le développement. Pour cette raison les spécifications sont sujettes à modifications sans préavis.



DC voltages are measured by a VOM of 20 k Ω /V input impedance.

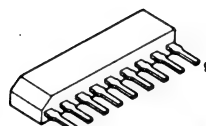
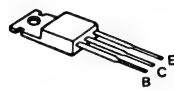
2SA733
2SA992
2SC945
2SB647
2SC1845
2SD667

HA1457W



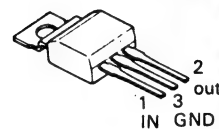
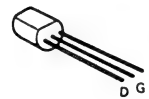
2SB690
2SD726

AN6551

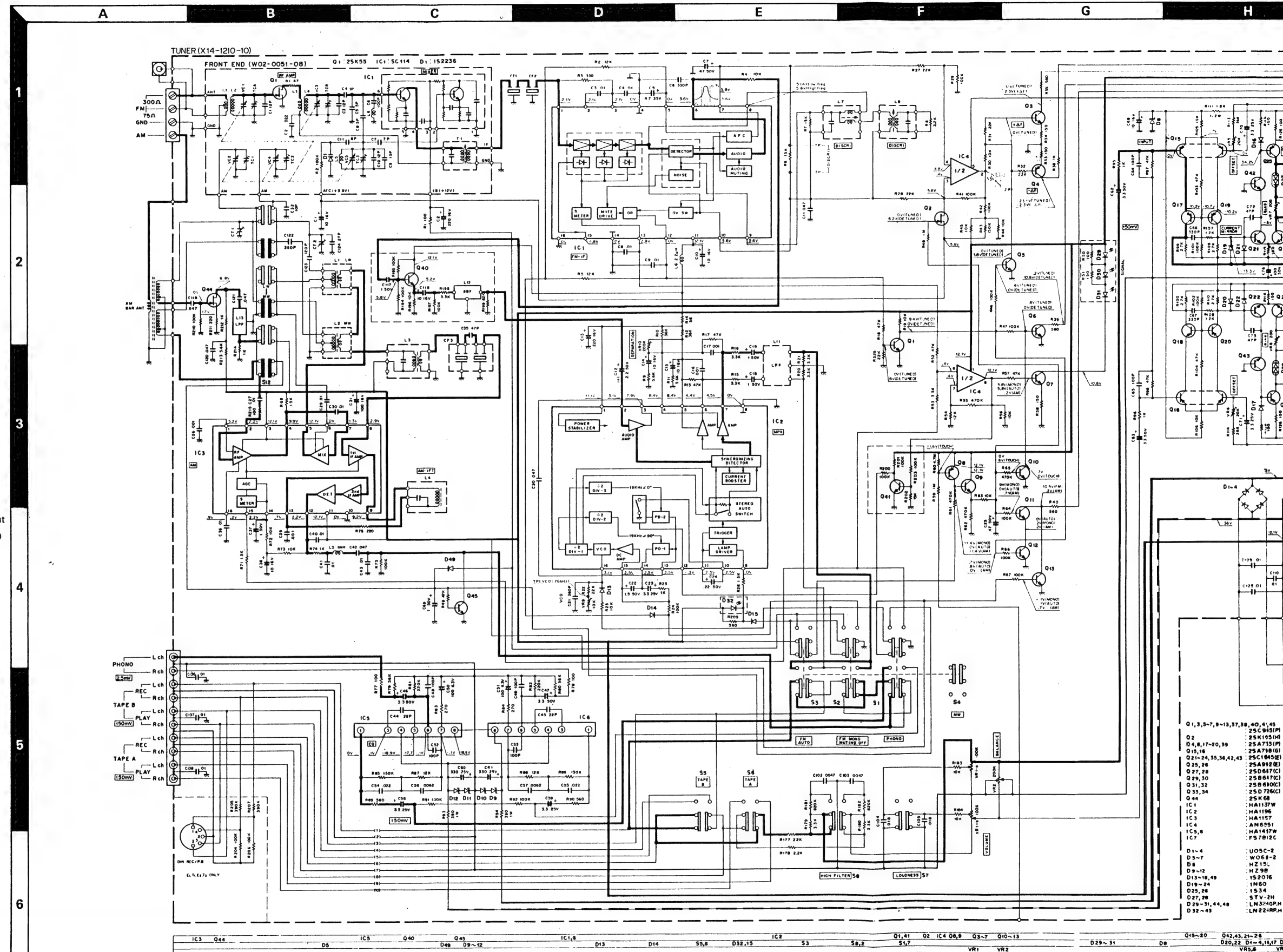
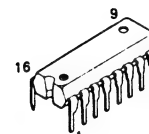


2SK55
2SK68
2SK105

FS7812C

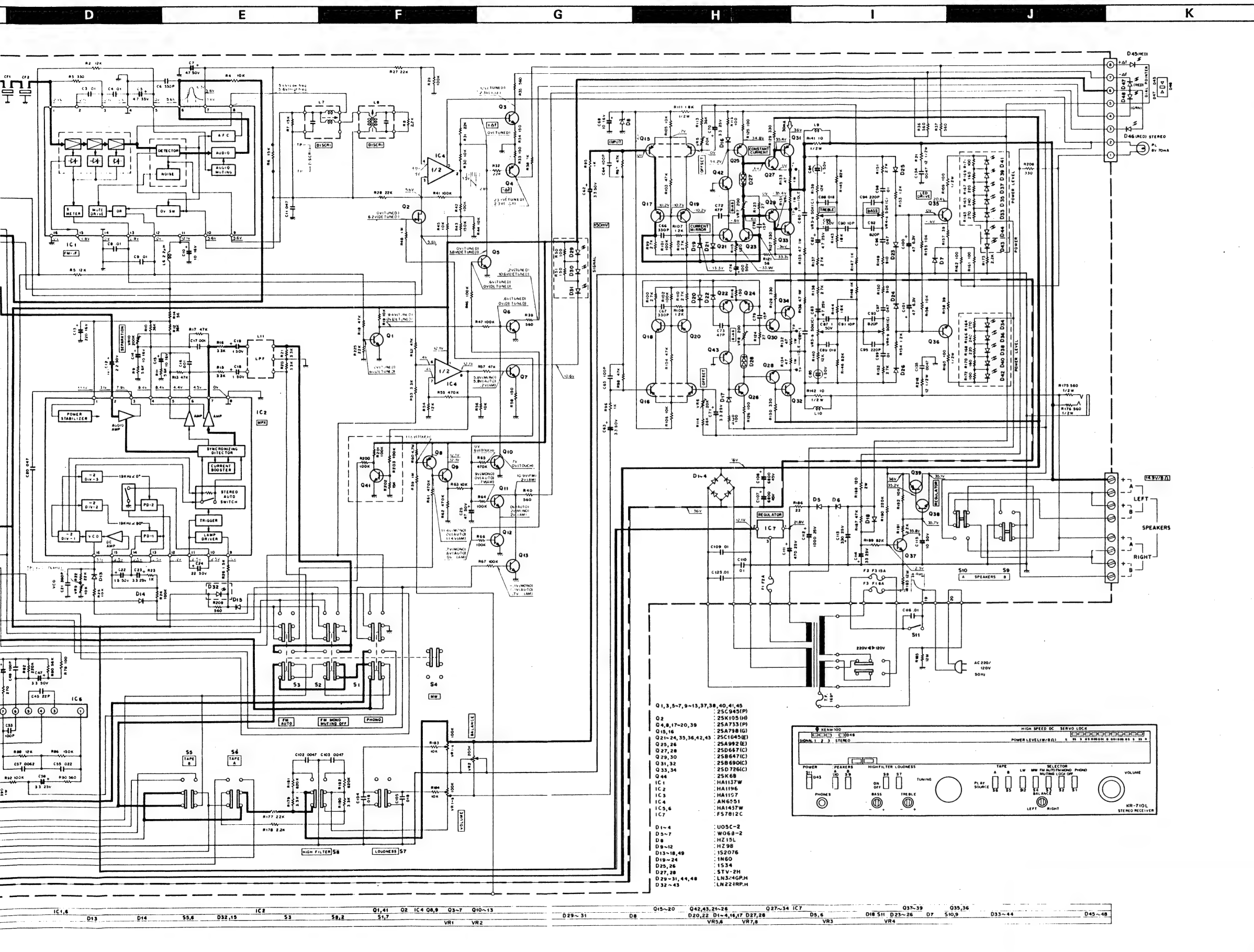


HA1137W
HA1196
HA1197



STEREO RECEIVER

KR-710L



SPECIFICATIONS

AUDIO SECTION

Rated Power Output	
8 ohms at 20 Hz to 20 kHz	28 W + 28 W
no more than 0.08% THD (FTC)	
4 ohms at 63 Hz to 12.5 kHz	40 W + 40 W
no more than 0.7% THD (IEC)	
Total Harmonic Distortion	0.08%
Rated Power Output into 8 ohms	0.04%
Intermodulation Distortion	7 Hz - 200 kHz
Frequency Response	+0 dB, -3 dB

S/N Weighted: Rated Output Power (IEC-A)

1 - Unweighted at 50 mW (DIN)	
PHONO	78 dB (56 dB)
TAPE	104 dB (60 dB)
Damping Factor at 8 ohms, 1 kHz	45
Transient Response	
Rise Time	1.5 μs
Slew Rate	±50 V/μs
Input Sensitivity/Impedance	2.5 mV/50 kΩ
PHONO	
TAPE	150 mV/50 kΩ

Tone Control	
Bass 100 Hz	±8 dB
Treble 10 kHz	±8 dB
Loudness Control (-30 dB)	100 Hz, +10 dB
High Filter	5 kHz, 6 dB/oct.

FM TUNER SECTION

Sensitivity at 75 ohms	
Mono: S/N 26 dB, 40 kHz Dev.	1.2 μV
Stereo: S/N 46 dB, 46 kHz Dev.	30 μV
50 dB Quietizing Sensitivity Mono (IHF)	4 μV
Limiting Level	
-3 dB Point, 40 kHz Dev.	1.0 μV
Frequency Response	30 Hz - 15 kHz
	+1 dB, -2 dB

Total Harmonic Distortion	
Mono: 1 kHz, 40 kHz Dev.	0.1%
Stereo: 1 kHz, 46 kHz Dev.	0.2%
S/N Weighted (IEC-A)	
Mono: 40 kHz Dev., 1 mV Input	72 dB
Stereo: 46 kHz Dev., 1 mV Input	68 dB
S/N Ratio (IHF)	
Mono: 75 kHz Dev., 1 mV Input	76 dB
Stereo: 75 kHz Dev., 1 mV Input	71 dB

FM Stereo Separation: 1 mV Input (DIN)	
250 Hz	35 dB
1 kHz	40 dB
6.3 kHz	30 dB
12.5 kHz	24 dB
Image Rejection Ratio	48 dB
Selectivity	
300 kHz, 20 dB Input	55 dB
IF Rejection Ratio	90 dB
AM Suppression Ratio	50 dB
Spurious Response Ratio	75 dB
Capture Ratio	1.0 dB
Pilot Tone 19 kHz	45 dB

MW TUNER SECTION

Sensitivity S/N 20 dB	20 μV (350 μV/m)
S/N Ratio: 1 mV Input	50 dB
Image Rejection Ratio	40 dB

LW TUNER SECTION

Sensitivity S/N 20 dB	15 μV (350 μV/m)
S/N Ratio: 1 mV Input	50 dB
Image Rejection Ratio	40 dB

GENERAL

Power Consumption	
Rated Power at 8 ohms	160 W
No signal	24 W
Dimensions	
W 440 mm	
H 110 mm	
D 298 mm	
Weight (Net)	7.2 kg

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Kenwood stibet ständige Verbesserungen in der Entwicklung an. Daher bleiben Änderungen der technischen Daten jederzeit vorbehalten.

Kenwood poursuit une politique de progrès constants en ce qui concerne le développement. Pour cette raison, les spécifications sont sujettes à modifications sans préavis.

DC voltages are measured by a VOM of 20 kΩ/V input impedance.

PARTS LIST

Refer to exploded view on page 6.

INSTRUCTION FOR PARTS LIST

Ref. No. 参照番号	Parts No. 部品番号	Description 部品名 / 規格	Re- marks 備考
①	18 1A	A01-0608-12 METALLIC CABINET	*K
②	19 2A	A20-1979-11 FRONT PANEL ASSY	PU
③	19 2A	A20-1979-11 FRONT PANEL ASSY	SM
④	19 2A	A20-1979-11 FRONT PANEL ASSY	SU
⑤	19 2A	A20-1979-11 FRONT PANEL ASSY	XW
⑥	R221	R43-1333-15 FL-PROOF RD330 J 2W	*
	R222	R43-1368-15 FL-PROOF RD680 J 2W	*
	VR1 ,2	R12-3301-05 TRIMMING POT. 20K(B)	*
	VR3 ,4	R19-4305-05 POTENTIOMETER (OUTPUT)	*
	VR5 ,6	R12-2302-05 TRIMMING POT. 5K(B)	*

① Exploded view drawing No.

② Position in exploded view.

③ Symbol of new parts.

④ Area to which parts are shipped. Example: A20-1390-13 is the part No. of FRONT PANEL ASSY for the "K" type products (for U.S.A.). When this column is blank, it means that the same type of parts (same parts No.) are used for the products shipped to all areas.

⑤ Reference No. in schematic diagram.

⑥ Abbreviation of "ceramic capacitor".

All capacitors and resistors are listed using abbreviations.

Abbreviations.

* Abbreviations of capacitors (Parts No. with initial letter "C").

ELECTRO Electrolytic capacitor
LL-ELEC Low leak electrolytic capacitor
NP-ELEC Non-pole electrolytic capacitor
MICA Mica capacitor
POLYSTY Polystyrene capacitor
MYLAR Mylar capacitor
CERAMIC Ceramic capacitor
TANTAL Tantalum capacitor
MF Metallized film capacitor
MP Metallized paper capacitor
OIL Oil capacitor

The unit "UF" is used in lieu of "μF".

* Abbreviations of resistors (Parts No. with initial letters "R").

RC Carbon composition resistor
RD Carbon film resistor
FL-PROOF RD Flame-proof carbon film resistor
RW Wire wound power resistor
FL-PROOF RS Flame-proof metal oxide film resistor
RN Metal film resistor
FUSE-RESIST Resistor with fuse function
2B Rated wattage 1/8W
2E Rated wattage 1/4W
2H Rated wattage 1/2W
3A Rated wattage 1W
3D Rated wattage 2W
3F Rated wattage 3W
3G Rated wattage 4W
3H Rated wattage 5W

All resistor values are indicated with the unit (Ω) omitted.

* Abbreviations common to capacitors and resistors.

C ±0.25pF (Used for capacitors only)
D ±0.5pF (Used for capacitors only)
F ±1%
G ±2%
J ±5%
K ±10%
M ±20%
Z +80% - 20% (Used for capacitors only)
P +100% - 0% (Used for capacitors only)

Resistors RD (carbon composition resistors) are not listed in the parts list. For values, refer to the schematic diagram.

Codes in X14-121*..**

K,P : X14-1210-10 T : X14-1210-51
T : X14-1210-51 T₂ : X14-1210-52 KR-710L
X : X14-1210-71 E : X14-1212-71
UM : X14-1210-81 E₂ : X14-1212-72 KR-710L

Ref. No. 参照番号	Parts No. 部品番号	Description 部品名 / 規格	Re- marks 備考
KR-710 (L)			
1 2B	-	REAR PANEL	
2 2A	-	SUBPANEL	
3 3B	-	BOTTOM PLATE	
4 2B	-	ANTENNA HOLDER	
10 1A	A01-0373-03	CASE	*K
10 1A	A01-0373-03	CASE	P
10 1A	A01-0374-03	CASE	UM
10 1A	A01-0374-03	CASE	XT
10 1A	A01-0374-03	CASE	E
10 1A	A01-0374-03	CASE KR-710L	
11 3A	A20-1674-08	FRONT PANEL ASSY	*K
11 3A	A20-1674-08	FRONT PANEL ASSY	PU
11 3A	A20-1674-08	FRONT PANEL ASSY	MX
11 3A	A20-1674-08	FRONT PANEL ASSY	E
11 3A	A20-1676-08	FRONT PANEL ASSY	T
11 3A	A20-1678-03	FRONT PANEL ASSY KR-710L	E2
11 3A	A20-1680-03	FRONT PANEL ASSY KR-710L	T2
12 1A	A50-0078-03	SIDE BOARD L	*K
12 1A	A50-0078-03	SIDE BOARD L	P
13 1A	A50-0079-03	SIDE BOARD R	*K
13 1A	A50-0079-03	SIDE BOARD R	P
-	B46-0055-20	WARRANTY CARD	P
-	B46-0060-00	WARRANTY CARD	T
-	B46-0061-20	WARRANTY CARD	K
-	B46-0062-20	WARRANTY CARD	U
-	B46-0063-13	WARRANTY CARD	U
-	B46-0064-10	WARRANTY CARD	X
-	B50-3157-00	INSTRUCTION MANUAL	*K
-	B50-3157-00	INSTRUCTION MANUAL	U
-	B50-3157-00	INSTRUCTION MANUAL	MX
-	B50-3158-00	INSTRUCTION MANUAL	*P
-	B50-3159-00	INSTRUCTION MANUAL	*E
-	B50-3160-00	INST. MANUAL KR-710L	*E
-	B50-3161-00	INSTRUCTION MANUAL	*T
-	B50-3162-00	INST. MANUAL KR-710L	*T
-	B50-3188-00	INST. MANUAL KR-710L	*E
-	B50-3205-00	INSTRUCTION MANUAL	M
14 3A	B20-0463-04	DIAL CALIBRATIONS KR-710	*
14 3A	B20-0473-04	DIAL CALIBRATIONS KR-710L	
15 3A	B21-0041-05	DIAL POINTER ASSY	
C116	C91-0044-08	CERAMIC 0.01UF 125VAC	K
C116	C91-0045-08	CERAMIC 0.01UF	P
C116	C91-0082-08	CERAMIC 0.01UF	UM
C116	C91-0151-08	CERAMIC 0.01UF	TE
C116, 117	C91-0151-08	CERAMIC 0.01UF	X
16 2B	D15-0164-04	DIAL PULLEY	
17 2B	D15-0172-04	SMALL PULLEY X4	
18 2A	D15-0175-05	SMALL PULLEY	
19 2A	D20-0154-03	DIAL SHAFT	
20 1B	E03-0010-08	AC OUTLET	KP
20 1B	E03-0010-08	AC OUTLET	UM
20 1B	E03-0010-08	AC OUTLET	X
21 1B	E04-0004-05	COAXIAL CONNECTOR	TE
22 1B	E30-0181-05	POWER CORD	KP
22 1B	E30-0459-05	POWER CORD	E
22 1B	E30-0545-05	POWER CORD	UM
22 1B	E30-0587-05	POWER CORD	T
22 1B	E30-0649-05	POWER CORD	X
-	G01-0045-24	TENSION SPRING	

PARTS LIST

Ref. No. 参照番号	Parts No. 部品番号	Description 部品名 / 規格	Re- marks 備考
-	H01-3166-08	CARTON BOX	*K
-	H01-3167-08	CARTON BOX	P
-	H01-3168-08	CARTON BOX	UM
-	H01-3168-08	CARTON BOX	X
-	H01-3169-08	CARTON BOX	T
-	H01-3170-08	CARTON BOX	E
-	H01-3171-08	CARTON BOX KR-710L	E
-	H01-3172-08	CARTON BOX KR-710L	T
-	H10-1551-02	POLYSTYRENE FOAMED FIX.	
-	H10-1552-12	POLYSTYRENE FOAMED FIX.	
-	H20-0417-04	POLYETHYLENE BAG	M
-	H20-0452-04	POLYETHYLENE BAG	KP
-	H20-0452-04	POLYETHYLENE BAG	UX
-	H20-0452-04	POLYETHYLENE BAG	TE
24 3B	J02-0088-05	FOOT	K
24 3B	J02-0089-05	FOOT	PU
24 3B	J02-0089-05	FOOT	MX
24 3B	J02-0089-05	FOOT	TE
25 1B	J41-0034-05	POWER CORD BUSHING	KP
25 1B	J42-0084-05	POWER CORD BUSHING	UM
25 1B	J42-0084-05	POWER CORD BUSHING	TE
25 1B	J42-0085-05	POWER CORD BUSHING	X
26 3A	K23-0339-04	KNOB (TUNING)	
27 3A	K23-0347-04	KNOB (VOLUME)	
28 2A, 3A	K23-0348-04	KNOB (TONE, BAL)	
29 2A, 2B	K27-0132-04	KNOB (PUSH)	
30 2A	K27-0136-04	KNOB	
31 2A	L01-2091-08	POWER TRANSFORMER	*K
31 2A	L01-2092-08	POWER TRANSFORMER	T
31 2A	L01-2095-08	POWER TRANSFORMER	UM
31 2A	L01-2095-08	POWER TRANSFORMER	X
31 2A	L01-2096-08	POWER TRANSFORMER	E
31 2A	L01-2097-08	POWER TRANSFORMER	P
32 2B	N08-0128-35	GND SCREW	
33 2B	S31-2050-05	SLIDE SWITCH (S1)	UM
33 2B	S31-2050-05	SLIDE SWITCH (S1)	XE
34 2A	S40-1010-05	PUSH BUTTON SWITCH	UM
34 2A	S40-1011-05	PUSH BUTTON SWITCH	KP
34 2A	S40-2099-05	PUSH BUTTON SWITCH	XT
34 2A	S40-2099-05	PUSH BUTTON SWITCH	E
35 2B	T90-0087-05	AM LOOP ANTENNA KR-710L	
36 2B	T90-0104-05	AM LOOP ANTENNA KR-710	
37 1A	T90-0202-05	FM INDOOR ANTENNA	
38 2B	X14-1210-10	RECEIVER PCB ASSY	*K
38 2B	X14-1210-10	RECEIVER PCB ASSY	P
38 2B	X14-1210-51	RECEIVER PCB ASSY	T
38 2B	X14-1210-52	RECEIVER PCB ASSY KR-710L	T2
38 2B	X14-1210-71	RECEIVER PCB ASSY	X
38 2B	X14-1210-81	RECEIVER PCB ASSY	UM
38 2B	X14-1212-71	RECEIVER PCB ASSY	E
38 2B	X14-1212-72	RECEIVER PCB ASSY KR-710L	E2
RECEIVER (X14-121x-xx)			
100 3B	-	FRAME	
CT1 ,2	C05-0013-15	CERAMIC TRIMMER 20P KR-710L	
C1	C24-1010-61	ELECTRO 10UF 16wV	
C2	C24-1222-71	ELECTRO 220UF 16wV	
C3 ,4	C55-1710-38	CERAMIC 0.01UF Z	
C5	C24-1447-57	ELECTRO 4.7UF 25wV	

Ref. No. 参照番号	Parts No. 部品番号	Description 部品名 / 規格	Re- marks 備考
C6	C71-1733-16	CERAMIC 330PF K	
C7	C24-1747-41	ELECTRO 0.47UF 50wV	
C8 ,9	C55-1710-38	CERAMIC 0.01UF Z	
C10	C24-1010-61	ELECTRO 10UF 16wV	
C11	C45-1747-36	POLYSTY 0.047UF K	
C12	C24-1722-51	ELECTRO 2.2UF 50wV	
C13	C24-1222-71	ELECTRO 220UF 16wV	
C14 ,15	C24-1010-61	ELECTRO 10UF 16wV	
C16 ,17	C46-1710-25	POLYSTY 0.001UF J	XE
C16 ,17	C46-1710-25	POLYSTY 0.001UF J	T
C16 ,17	C46-1715-25	POLYSTY 0.0015UF J	KP
C16 ,17	C46-1715-25	POLYSTY 0.0015UF J	M
C18 ,19	C25-1710-57	LL-ELEC 1UF 50wV	
C20	C46-1747-35	POLYSTY 0.047UF J	
C21	C48-1736-15	POLYSTY 360PF J	
C22	C25-1715-57	LL-ELEC 1.5UF 50wV	
C23	C24-1433-51	ELECTRO 3.3UF 25wV	
C24	C25-1722-47	LL-ELEC 0.22UF 50wV	
C25	C24-1747-41	ELECTRO 0.47UF 50wV	
C26	C55-1710-28	CERAMIC 0.001UF Z	
C27	C55-1710-38	CERAMIC 0.01UF Z	DKR-710
C28	C71-1710-02	CERAMIC 10PF	
C29	C91-0003-00	CERAMIC 0.01UF 25wV	
C30	C55-1710-38	CERAMIC 0.01UF Z	
C31	C24-1210-71	ELECTRO 100UF 16wV	
C32	C70-1710-02	CERAMIC 10PF D	
C33	C25-1710-57	LL-ELEC 1UF 50wV	
C34	C71-1708-02	CERAMIC 8PF DKR-710	
C35	C71-1747-05	CERAMIC 47PF J	
C36	C55-1710-38	CERAMIC 0.01UF Z	
C37	C25-1710-57	LL-ELEC 1UF 50wV	
C38	C24-1010-61	ELECTRO 10UF 16wV	
C39	C55-1710-28	CERAMIC 0.001UF Z	
C40	C55-1710-38	CERAMIC 0.01UF Z	
C41	C91-0003-00	CERAMIC 0.01UF 25wV	
C42	C46-1747-35	POLYSTY 0.047UF J	
C43	C91-0003-00	CERAMIC 0.01UF 25wV	
C44 ,45	C71-1722-05	CERAMIC 22PF J	
C46 ,47	C25-1733-57	LL-ELEC 3.3UF 50wV	
C48 ,49	C71-1710-15	CERAMIC 100PF J	
C50 ,51	C24-0810-79	ELECTRO 100UF 6.3wV	
C52 ,53	C71-1710-15	CERAMIC 100PF J	
C54 ,55	C46-1722-35	POLYSTY 0.022UF J	
C56 ,57	C49-2062-24	POLYSTY 0.0062UF D	
C58 ,59	C24-1433-51	ELECTRO 3.3UF 25wV	
C60 ,61	C24-1433-71	ELECTRO 330UF 25wV	
C62 ,63	C25-1733-57	LL-ELEC 3.3UF 50wV	
C64 ,65	C71-1710-15	CERAMIC 100PF J	
C66 ,67	C71-1733-16	CERAMIC 330PF K	
C68	C24-1010-61	ELECTRO 10UF 16wV	
C69	C25-1710-57	LL-ELEC 1UF 50wV	
C70 ,71	C24-1433-51	ELECTRO 3.3UF 25wV	
C72 ,73	C71-1747-05	CERAMIC 47PF J	
C76	C24-1710-71	ELECTRO 100UF 50wV	
C78 ,79	C71-1715-06	CERAMIC 15PF K	
C80 ,81	C46-1710-45	POLYSTY 0.1UF J	
C82 ,83	C24-1447-51	ELECTRO 4.7UF 25wV	
C84 ,85	C26-1710-57	NP-ELEC 1UF 50wV	
C86 ,87	C25-1710-47	LL-ELEC 0.1UF 50wV	
C88 ,89	C46-1718-35	POLYSTY 0.018UF J	
C90 ,91	C71-1710-02	CERAMIC 10PF D	
C92 ,93	C52-1782-16	CERAMIC 820PF K	

PARTS LIST

Ref. No. 参照番号	Parts No. 部品番号	Description 部品名 / 規格	Re- marks 備考
C94 ,95 C96 ,97 C98 ,99 C100,101 C102,103	C71-1722-15 C46-1747-35 C46-1710-35 C24-1047-61 C46-1747-25	CERAMIC 220PF J POLYSTY 0.047UF J POLYSTY 0.01UF J ELECTRO 470UF 6.3WV POLYSTY 0.0047UF J	
C104,105 C107,108 C109,110 C111 C112	C46-1787-35 C90-0492-08 C54-2710-29 C24-1447-71 C24-1410-81	POLYSTY 0.018UF J ELECTRO 6800UF 45WV CERAMIC 0.01UF P ELECTRO 470UF 25WV ELECTRO 1000UF 25WV	
C113 C114 C115 C117 C118	C24-1433-71 C24-1433-61 C24-1710-61 C25-1710-57 C24-1010-61	ELECTRO 330UF 25WV ELECTRO 33UF 25WV ELECTRO 10UF 50WV ELECTRO 1UF 50WV ELECTRO 10UF 16WV	ET ET
C119-121 C122 C123 C124 C125	C46-1747-35 C48-1736-15 C47-1712-15 C71-1727-06 C54-2710-29	POLYSTY 0.047UF KKR-710L POLYSTY 360PF JKR-710LET POLYSTY 120PF J CERAMIC 27PF KKR-710L CERAMIC 0.01UF PKR-710L	
C134,135 C136-138	C46-1747-25 C55-1710-38	POLYSTY 0.0047UF J CERAMIC 0.01UF Z	
101 1B 102 2A 103 2B 104 2B 105 2B	E06-0513-05 E11-0074-05 E13-0423-05 E13-0612-05 E20-0439-05	DIN CONNECTOR PHONE JACK PHONO JACK (4P) PHONO JACK (6P) ANT TERMINAL	ET
106 2A	E20-0813-05	SPEAKER TERMINAL	
F1 F1 F1 F2 F2	F05-2023-05 F05-2029-05 F06-2027-05 F05-3022-05 F05-3122-05	FUSE(2A) FUSE(2A) FUSE(2A) FUSE(3A) FUSE(3,15A)	MX ET KP MX E
F2 F3 F3	F06-3023-05 F05-1521-05 F05-1622-05	FUSE(3A) FUSE(1.5A) FUSE(1.6A)	KP MX ET
107 2B 108 2B 109 2B	J13-0055-05 J19-0569-04 J19-0570-03	FUSE CLIP LED HOLDER LED HOLDER	
CF1 ,2 CF1 ,2 CF1 ,2 CF3 L1	L72-0057-15 L72-0057-15 L72-0059-05 L72-0078-05 L31-0457-05	CERAMIC FILTER CERAMIC FILTER CERAMIC FILTER CERAMIC FILTER AM ANT COIL KR-710	KP MX ET *
L2 L2 L3 L4 L5	L32-0242-05 L32-0244-05 L30-0329-05 L30-0284-05 L40-1021-13	LW OSC COIL KR-710L AM OSC COIL KR-710 AM IFT AM IFT INDUCTOR	
L6 L7 L8 L9 ,10 L11	L40-2292-13 L30-0316-05 L30-0317-05 L33-0282-08 L79-0072-05	INDUCTOR FM DET COIL FM DET COIL INDUCTOR LPF	ET
L12 L13 L14 L15 L15	L79-0109-05 L79-0074-05 L32-0246-05 L40-2292-13 L40-2292-13	BBF LW LPF KR-710L MW OSC COIL KR-710L INDUCTOR KR-710 INDUCTOR KR-710	KP MX ET
L15	L40-2292-13	INDUCTOR KR-710	ET

Ref. No. 参照番号	Parts No. 部品番号	Description 部品名 / 規格	Re- marks 備考
R1 R14 R93 ,94 R111 R115,116	R43-1210-15 R43-1256-05 R47-1539-15 R43-1318-25 R43-1215-15	FL-PROOF RD100 J 2E FL-PROOF RD56 J 2E FL-PROOF RS390 J 3A FL-PROOF RD1.8K J 2H FL-PROOF RD150 J 2E	
R119,120 R121 R125,126 R127-130 R131-134	R43-1210-15 R43-1256-05 R43-1210-15 R43-1233-15 R92-0110-05	FL-PROOF RD100 J 2E FL-PROOF RD56 J 2E FL-PROOF RD100 J 2E FL-PROOF RD330 J 2E CEMENT 0.47 K 3A	
R135,136 R141,142 R159,160 R175,176 R186	R47-5547-95 R40-8310-05 R40-8310-15 R42-7256-15 R43-1222-05	FL-PROOF RS4.7 J 3A RC 10 J 2H RC 100 J 2H RC 560 J 2H FL-PROOF RD22 J 2E	
R188 R193 R193 R193 R193	R47-5512-15 R40-8347-56 R40-8347-56 R92-0173-05 R92-0234-05	FL-PROOF RS120 J 3D RC 4.7M K 2H RC 4.7M K 2H RC 2.2M J 2H RC 12M J 2H	MX U KP ET
R216,217 VR1 VR2 VR3 ,4 VR5 ,6	R43-1312-05 R06-5055-05 R05-5004-05 R10-4005-05 R12-3005-05	FL-PROOF RD12 J 2H POTENTIOMETER (VOL.) POTENTIOMETER (BAL.) POTENTIOMETER (TONE) TRIMMING POT. (OFFSET)	
VR5 ,6 VR7 ,8 VR9 VR9 VR10	R12-3040-05 R12-0081-08 R12-3002-05 R12-3041-05 R12-5018-05	TRIMMING POT. (OFFSET) TRIMMING POT. (BIAS) TRIMMING POT. (VCO) TRIMMING POT. (VCO) TRIMMING POT. (SEPARATE)	
VR10	R12-5026-05	TRIMMING POT. (SEPARATE)	
110 2B 111 2B S1 S1 S2	S90-0035-05 S90-0037-05 S42-6008-05 S42-7003-05 S42-2041-08	SLIDE SWITCH KR-710L REMOTE WIRE KR-710L PUSHBUTTON SWITCHKR-710L PUSHBUTTON SWITCHKR-710L PUSHBUTTON SWITCH	
S3	S42-2035-05	PUSHBUTTON SWITCH	
D1 -4 D5 -7 D8 D9 -12 D13 -18	V11-0238-05 V11-0295-05 V11-2101-80 V11-2104-40 V11-0271-05	U05C W06B HZ15L HZ9B 1S2076	*
D19 -24 D25 ,26 D27 ,28 D29 -31 D32 -43	V11-0051-05 V11-7701-50 V11-5100-80 V11-1100-20 V11-1100-30	1N60 1S34 STV-2HW LED (LN324GP,H) GREEN LED (LN224RP,H) RED	*
D44 D49 IC1 IC2 IC3	V11-1100-20 V11-0271-05 V30-0133-05 V30-0155-05 V30-0196-05	LED (LN324GP,H) GREEN 1S2076 KR-710L HA1137W HA1196 HA1197	
IC4 IC5 ,6 IC7 Q1 Q2	V30-0353-10 V30-0264-10 V30-0473-10 V03-0405-05 V09-0127-50	AN6551 HA1457W FS7812C 2SC945(P) 2SK105(H)	*
Q3 Q4 Q5 -7 Q8	V03-0405-05 V01-0213-05 V03-0405-05 V01-0213-05	2SC945(P) 2SA733(P) 2SC945(P) 2SA733(P)	

KR-710(L)**PARTS LIST**

Ref. No. 参照番号	Parts No. 部品番号	Description 部品名 / 規格	Re- marks 備考
Q9 -14	V03-0405-05	2SC945(P)	
Q15 ,16	V01-0798-00	2SA798(G)	
Q17 -20	V01-0213-05	2SA733(P)	
Q21 -24	V03-1845-00	2SC1845(E)	
Q25 ,26	V01-0992-00	2SA992(E)	
Q27 ,28	V04-0667-00	2SD667(C)	*
Q29 ,30	V02-0647-00	2SB647(C)	*
Q31 ,32	V02-0690-10	2SB690(C)	
Q33 ,34	V04-0726-00	2SD726(C)	
Q35 ,36	V03-1845-00	2SC1845(E)	
Q37 ,38	V03-0405-05	2SC945(P)	
Q39	V01-0213-05	2SA733(P)	
Q40 ,41	V03-0405-05	2SC945(P)	ET
Q42 ,43	V03-1845-00	2SC1845(E)	
Q44	V09-0122-20	2SK68(M) KR-710L	
Q45	V03-0405-05	2SC945(P)	
112 2B	W02-0051-08	FM FRONT END	*K
112 2B	W02-0051-08	FM FRONT END	*X
112 2B	W02-0051-08	FM FRONT END	ET
112 2B	W02-0051-08	FM FRONT END	P
112 2B	W02-0052-08	FM FRONT END KR-710L	ET